National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for Titanium Metals Corporation

Public Notice No.: 194391
Public Notice Date: January 18, 2024
Comment Period Ends: February 17, 2024

Ohio EPA Permit No.: 0IE00010*MD
Application No.: OH0010910

Name and Address of Applicant:
Titanium Metals Corporation
100 Titanium Way
Toronto, OH 43964

Name and Address of Facility Where Discharge Occurs:
Titanium Metals Corporation Toronto Plant
100 Titanium Way
Toronto, OH 43964
Jefferson County

Receiving Water: Jeddo Run, Ohio River

Subsequent Stream Network: Ohio River

INTRODUCTION

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act (CWA) and Ohio Water Pollution Control Law (Ohio Revised Code [ORC] 6111). Decisions to award variances to Water Quality Standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Antidegradation provisions in Ohio Administrative Code (OAC) Chapter 3745-1 describe the conditions under which water quality may be lowered in surface waters. No antidegradation review was necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. Many of these have already been established by the United States Environmental Protection Agency (U.S. EPA) in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called Projected Effluent Quality (PEQ). This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

SUMMARY OF PERMIT CONDITIONS

The effluent limits and/or monitoring requirements proposed for all parameters are the same as in the current permit, except those listed below.

Outfall 001

New daily maximum effluent limits are proposed for copper and total residual chlorine because of reasonable potential to exceed WQS. A 48-month compliance schedule is proposed for the facility to achieve compliance with the new copper limits. A 36-month compliance schedule is proposed for the facility to achieve compliance with the new chlorine limit. Details are in Part I, C of the permit.

Increased monitoring is proposed for zinc because recent sampling data indicates reasonable potential to exceed WQS.

Limits are proposed to be removed for oil and grease because effluent data does not indicate reasonable potential to exceed WQS. Monitoring is proposed to continue at the same frequency.

Outfall 002

The facility no longer discharges process water through this outfall. The effluent shall only contain stormwater associated with industrial activity. As a result of this change, monitoring requirements and limits are proposed to be removed for temperature, pH, oil and grease, and hardness.

A new daily maximum effluent limit is proposed for copper because of reasonable potential to exceed WQS. A 48-month compliance schedule is proposed for the facility to achieve compliance with the new limit. Details are in Part I, C of the permit.

Outfall 003

Limits are proposed to be removed for oil and grease because effluent data does not indicate reasonable potential to exceed WQS. Monitoring is proposed to continue at the same frequency.

Outfall 004

New monitoring is proposed for total suspended solids to be consistent with the facility's other stormwater-containing outfalls.

Limits are proposed to be removed for oil and grease because effluent data does not indicate reasonable potential to exceed WQS. Monitoring is proposed to continue at a reduced frequency of quarterly.

Outfall 006

Limits are proposed to be removed for oil and grease because effluent data does not indicate reasonable potential to exceed WQS. Monitoring is proposed to continue at a reduced frequency of monthly.

Monitoring requirements are proposed to be removed for fluoride and mercury because recent sampling data do not indicate reasonable potential to exceed WQS.

Monitoring requirements are proposed to be removed for manganese because current WQS do not contain criteria for this pollutant. Toxicity testing of the effluent do not indicate impacts to aquatic life as a result of manganese in the discharge.

Whole effluent toxicity (WET) monitoring is proposed to be removed from the permit as recent tests do not indicate adverse impacts to aquatic life.

Internal Monitoring Station 602

Lower categorical effluent limits are proposed for total cyanide and zinc based on updated production values and the applicable effluent limitation guidelines (ELGs) in 40 CFR 471, Subpart F.

Internal Monitoring Station 620

Lower categorical effluent limits are proposed for chromium and nickel based on updated production values and the applicable effluent limitation guidelines (ELGs) in 40 CFR 471, Subparts F and I.

In Part II of the permit, special conditions are included that address downstream public water supply notification and outfall signage.

Stormwater Benchmarks

Updated stormwater benchmarks are proposed for each permitted outfall. Benchmark values are based on the inside mixing zone maximum (IMZM) criteria in OAC 3745-1-35 and the applicable effluent/instream hardness for each discharge.

Updates are proposed to Parts IV, V and VI to maintain consistency with the renewed Industrial Stormwater Multi-Sector General Permit. The main changes include the following: benchmark sampling to be taken within the first 8 quarters (2 years); quarterly sample collection during any month of the quarter; and submission of a corrective action report for benchmark exceedances.

Table of Contents

Page
INTRODUCTION 1
SUMMARY OF PERMIT CONDITIONS 2
PROCEDURES FOR PARTICIPATION IN THE FORMULATION OF FINAL DETERMINATIONS 6
INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS 6
LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION 8
FACILITY DESCRIPTION 8
DESCRIPTION OF EXISTING DISCHARGE 9
ASSESSMENT OF IMPACT ON RECEIVING WATERS 9
DEVELOPMENT OF WATER-QUALITY-BASED EFFLUENT LIMITS 10
REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS 12
OTHER REQUIREMENTS 17

List of Figures

Figure 1. Location of TIMET 18
Figure 2. Water Balance Diagram 19

List of Tables

Table 1. Monitoring Stations, Wastewater Sources, and Discharge Points 20
Table 2. Effluent Limit Violations 21
Table 3. Average Annual Effluent Flow Rates 21
Table 4. Effluent Characterization Based on Form 2C Data 23
Table 5. Effluent Characterization for Outfall 006 Using Ohio EPA Data 24
Table 6. Effluent Characterization Using Self-Monitoring Data 26
Table 7. Projected Effluent Quality 28
Table 8. Summary of Acute and Chronic Toxicity Results 31
Table 9. Water Quality Criteria in the Study Area 32
Table 10. Instream Conditions and Discharger Flow 34
Table 11. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria 36
Table 12. Parameter Assessment 38
Table 13. Final Effluent Limits 42

List of Attachments

Attachment 1. Applicable Federal Effluent Limitation Guidelines 45
Attachment 2. List of Approved Treatment Additives 52
Attachment 3. Whole Effluent Toxicity Reasonable Potential Analysis 53

List of Addendums

Addendum 1. Acronyms 54

PROCEDURES FOR PARTICIPATION IN THE FORMULATION OF FINAL DETERMINATIONS

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be emailed to HClerk@epa.ohio.gov or mailed to:

Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted by email to epa.dswcomments@epa.ohio.gov (preferred method) or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Chris Monroe, (614) 644-2007, Christopher.Monroe@epa.ohio.gov.

INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: https://epa.ohio.gov/static/Portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf . In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to

accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall email to epa.dswcomments@epa.ohio.gov (preferred method) or deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, a written request for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-39. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION

Titanium Metals Corporation Toronto Plant (TIMET) discharges to Jeddo Run at River Miles (RMs) 0.1 (outfalls 001, 002) and 0.07 (outfall 003). The facility also discharges to the Ohio River at RM 920.8 (outfall 006) and 920.85 (outfall 004), which is approximately Ohio River Mile Point 60. Figure 1 shows the approximate location of the facility.

This segment of the Ohio River is described by Ohio EPA River Code: 25-650, U.S. EPA River Reach #: 05030101, County: Jefferson, Ecoregion: Western Allegheny Plateau. The Ohio River is designated for the following uses under Ohio's WQS (OAC 3745-1-32): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Public Water Supply (PWS), and Bathing Waters (BW).

Jeddo Run is described Ohio EPA River Code: 06-086, Hydrologic Unit Code: 05030101-11-06, County: Jefferson, Ecoregion: Western Allegheny Plateau. Jeddo Run is designated for the following uses under Ohio's WQS (OAC 3745-1-13): Coldwater habitat (CWH), AWS, IWS, and Primary Contact Recreation (PCR).

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric WQS are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural water supply and industrial water supply.

FACILITY DESCRIPTION

TIMET manufactures titanium, titanium alloy sheet, strip, bar, and plate, and zirconium/ hafnium sheet, strip, bar, and plate. The industrial processes at the facility include (see Figure 2):

- Forging
- Rolling
- Pickling
- Grinding
- Welding
- Annealing
- Extruding
- Cutting

The process operations at TIMET are classified in the Standard Industrial Classification (SIC) category 3356, Nonferrous Metals Forming. The process wastewaters generated from these operations are regulated under 40 CFR 471, "Non-Ferrous Metals Forming Point Source Category," Subpart F, "Titanium Forming Subcategory" and Subpart I, "Zirconium/Hafnium Subcategory."

TIMET obtains groundwater from a private well for non-contact cooling water (forge shop, hydraulic systems, pickling, annealing, and AC units), forge quench recycling, pickling rinse, annealing, and wet scrubbing.

TIMET is covered under the following additional permit(s): 06-41-18-0064 (Title V).

DESCRIPTION OF EXISTING DISCHARGE

TIMET has four process outfalls. Table 1 highlights the primary outfalls, internal monitoring stations, wastewater sources, and discharge/receiving streams at TIMET. Figure 2 provides a flow schematic of the wastewater sources and supplies associated with TIMET Process wastewater is treated by the following processes:

- Equalization
- Chemical precipitation
- Flocculation
- Settling (clarification)
- Sand filtration
- Post neutralization

Sanitary waste is discharged to the City of Toronto Wastewater Plant.

Effluent violations can be found on Table 2.

The average flow rates for the permit cycle for outfalls 001, 002, 003, 004, and 006 are shown on Table 3.

Table 4 presents data compiled from the NPDES permit renewal application Form 2C.

Table 6 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period March 2018 to February 2023, and current permit limits are provided for comparison.

Table 7 summarizes the chemical specific data for all final outfalls by presenting the average and maximum PEQ values.

Table 8 summarizes the results of acute and chronic WET tests of the final effluent.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

The Hardin Run-Ohio River watershed assessment unit, which includes Jeddo Run in the vicinity of TIMET, is not listed as impaired on Ohio's 303(d) list.

The full Integrated Report is available through the Ohio EPA, Division of Surface Water website at: https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/ohio-integrated-water-quality-monitoring-and-assessment-report

TIMET discharges directly to the Ohio River in the Pike Island dam pool. Water quality monitoring on the Ohio River is performed by the Ohio River Valley Water Sanitation Commission (ORSANCO). This information can be found in the *2022 Biennial Assessment of Ohio River Water Quality Conditions (305b) Report* and/or biological survey results/pool reports.

The Biennial Report can be found at this website – https://www.orsanco.org/publications/biennial-assessment-305b-report/.

The most recent pool report can be found here – https://www.orsanco.org/publications/pool-assessments/.

ORSANCO evaluates the river for four uses: aquatic life, contact recreation impairment, public water supply, and fish consumption. Every pool of the Ohio River has been assessed as fully supporting the aquatic life and public water supply uses. The segment of the Ohio River that TIMET discharges to is impaired for contact recreation due to bacteria. ORSANCO data shows mile points 40.2 to 82.2 not supporting recreational use. The Ohio River is also classified as partially supporting fish consumption due to historical PCB and dioxin data, but fully supporting the use for mercury. This indicates that TIMET is not contributing to the impairments in the Ohio River because sanitary wastewater is directed to a municipal facility and the site is not a known source of PCBs/dioxin. No new limits are recommended at this time.

DEVELOPMENT OF WATER-QUALITY-BASED EFFLUENT LIMITS

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

Parameter Selection

Effluent data for TIMET were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	March 2018 through February 2023
NPDES application Form 2C data	March 2018 through July 2022

Statistical Outliers and Other Non-representative Data

The data were examined and the following value was removed from the evaluation to give a more reliable PEQ:

Outfall 001
Oil and Grease – 24.3 mg/L, 8/6/20, uncharacteristically high value.
Zinc – 1,100 µg/L, 6/6/19, uncharacteristically high value.

Outfall 006
Oil and Grease – 29 mg/L, 4/28/22, uncharacteristically high value.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (see Table 7).

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If

both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (see Table 12).

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. For free flowing streams, WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

Outfalls 001, 002 and 003 discharge to Jeddo Run. However, the lower portion of Jeddo Run near the facility is at a lower elevation of the Ohio River and is backwater for the river. Therefore, for modeling purposes, all outfalls were treated as direct discharges to the Ohio River.

The outfalls to Jeddo Run (001, 002, and 003) were allocated together for most parameters due the relatively close proximity of the outfalls. Outfalls 001 and 002 were allocated together for antimony and lead. Outfalls 001 and 003 were allocated together for titanium. The WLA for chlorine was done separately for outfall 001 because it was unique to the waste stream.

The direct discharges to the Ohio River (004 and 006) were allocated together for several parameters due the relatively close proximity of the outfalls. The exceptions were the aluminum, antimony, arsenic, bis(2-ethylhexyl) phthalate, cadmium, chloride, copper, diethyl phthalate, molybdenum, nitrate plus nitrite, selenium, strontium, titanium, total filterable residue, and zinc WLAs, which were done separately for each outfall because they were unique to each waste stream.

The applicable waterbody uses for this facility's discharge to the Ohio River and the associated stream design flows are as follows:

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	10% of annual 7Q10
	Maximum	1% of annual 7Q10
Agricultural Water Supply		10% of harmonic mean flow
Human Health (carcinogens)		10% of harmonic mean flow
Human Health (non-carcinogens)		100% of 7Q10

Allocations are developed using a percentage of stream design flow as specified in Table 10, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 9 and Table 10. The WLA results to maintain all applicable criteria are presented in Table 11.

Whole Effluent Toxicity Wasteload Allocation

Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET tests measure survival and mortality of the test organism over a short time period (48- or 96-hours). Chronic WET tests measure survival and mortality, as well as effects on growth and reproduction over a longer period of the test organism's life.

WQS for WET are expressed in Ohio's narrative "free from" WQS rule [OAC 3745-1-04(D)]. These "free froms" are translated into toxicity units (i.e. TUa and TUc) for use in NPDES permits by the associated WQS Implementation Rule (OAC 3745-2-09). The translation results in numeric values of 0.3 TUa and 1.0 TUc. WLAs can then be calculated using these values as if they were water quality criteria.

There are two separate reasonable potential procedures in Ohio - one for the Lake Erie watershed and one for the Ohio River watershed. Dischargers in the Ohio River watershed are assessed using OAC 3745-33-07(B). Dischargers in the Lake Erie watershed are assessed in accordance with the "Great Lakes Water Quality Initiative Implementation Procedures" contained in 40 CFR Part 132, Appendix F, Procedure 6.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TUc) and 7Q10 flow for the average and the acute toxicity unit (TUa) and 1Q10 flow for the maximum. WET WLAs are based on meeting the values of 0.3 TUa and 1.0 TUc downstream of the discharge, and include any available dilution. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. WLAs for acute toxicity are capped at 1.0 TUa unless the discharger demonstrates that an Area-of-Initial-Mixing (AIM) exists under OAC 3745-1-06, or that one of the factors in OAC 3745-33-07(B)(5)-(9) allows a higher TUa limit to be granted. For the purposes of establishing WET limitations, the values of 1.0 TUa and 1.0 TUc are the most restrictive limitations that can be applied in NPDES permits [OAC 3745-33-07(B)(10)].

For TIMET, the WLA value for outfall 006 is 1.0 TUa.

The chronic toxicity unit (TUc) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (IC25):

$$TUc = 100/IC25$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations except when the following equation is more restrictive (Ceriodaphnia dubia only):

TUc = 100/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

The acute toxicity unit (TUa) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (LC50) for the most sensitive test species:

$$TUa = 100/LC50$$

REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 11. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 7, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 12.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 13 presents the final effluent limits and monitoring requirements proposed for TIMET

outfalls 001, 002, 003, 004, 006, and internal monitoring stations 602 and 620, and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Outfall 001

pH
Limits proposed for pH are based on provisions of OAC 3745-1-35.

Copper and Total Residual Chlorine
The Ohio EPA risk assessment (Table 12) places copper and total residual chlorine in group 5. This placement, as well as the data in Table 4, Table 5, and Table 6, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ is greater than 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1). The daily maximum concentration limits for these parameters are based on the inside mixing zone maximum criteria. Loading limits are not proposed because this discharge has variable flows due to influence from stormwater. Monitoring for copper is proposed to increase to a frequency of monthly.

Zinc
The Ohio EPA risk assessment (Table 12) places zinc in group 4. This placement, as well as the data in Table 4, Table 5, and Table 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). Monitoring for zinc is proposed to increase to a frequency of monthly.

Mercury
The Ohio EPA risk assessment (Table 12) places mercury in group 4. This placement, as well as the data in Table 4, Table 5, and Table 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). However, in this case the grouping has been based on a single result that is significantly lower than the applicable water quality criterion. Using the Director's discretion allowed by OAC 3745-33-07(A)(6), monitoring is not proposed.

Antimony, Arsenic, Barium, Boron, Chromium, Cobalt, Fluoride, Iron, Lead, Molybdenum, Nickel, Nitrate+Nitrite, and Tin
The Ohio EPA risk assessment (Table 12) places antimony, arsenic, barium, boron, chromium, cobalt, fluoride, iron, lead, molybdenum, nickel, nitrate+nitrite, and tin in groups 2 and 3. This placement, as well as the data in Table 4, Table 5, and Table 6, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed.

Flow Rate, Temperature, Total Suspended Solids (TSS), and Oil and Grease
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Hardness
Based on best technical judgment, monitoring is proposed for hardness. The purpose of the monitoring is to obtain data on the hardness of the effluent for determining metals criteria to apply within the mixing zone.

Outfall 002

Copper

Sampling at outfall 002 yielded analytical results for copper that exceed the IMZM criteria for this parameter. This indicates that these discharges have the potential to contribute to acute toxicity in the immediate vicinity of the outfall. A daily maximum concentration limit is proposed to be protective of the IMZM. Part I, C of the permit includes a 48-month compliance schedule to meet the new limits.

Zinc
Monitoring is proposed to continue for zinc based on best technical judgement. Sector-specific benchmark monitoring is required for this pollutant by the Multi-Sector General Permit for industrial stormwater.

Flow Rate
Monitoring for this parameter is proposed to continue in order to evaluate the performance of the treatment plant.

Outfall 003

pH
Limits proposed for pH are based on provisions of OAC 3745-1-35.

Copper
The Ohio EPA risk assessment (Table 12) places copper in group 4. This placement, as well as the data in Table 4, Table 5, and Table 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2).

Arsenic, Barium, Boron, Chromium, Cobalt, Fluoride, Iron, Molybdenum, Nickel, Nitrate+Nitrite, and Tin
The Ohio EPA risk assessment (Table 12) places arsenic, barium, boron, chromium, cobalt, fluoride, iron, molybdenum, nickel, nitrate+nitrite, and tin in groups 2 and 3. This placement, as well as the data in Table 4, Table 5, and Table 6, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed.

Zinc
Monitoring is proposed to continue for zinc based on best technical judgement. Sector-specific benchmark monitoring is required for this pollutant by the Multi-Sector General Permit for industrial stormwater.

Flow Rate, Oil and Grease, Temperature, and Total Suspended Solids (TSS)
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Hardness
Based on best technical judgment, monitoring is proposed for hardness. The purpose of the monitoring is to obtain data on the hardness of the effluent for determining metals criteria to apply within the mixing zone.

Outfall 004

pH
Limits proposed for pH are based on provisions of OAC 3745-1-35.

Barium, Boron, Cobalt, Fluoride, Iron, Mercury, Molybdenum, Nickel, and Tin
The Ohio EPA risk assessment (Table 12) places barium, boron, cobalt, fluoride, iron, mercury, molybdenum, nickel, and tin in groups 2 and 3. This placement, as well as the data in Table 4, Table 5, and Table 6, support

that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed.

Copper and Zinc
Monitoring is proposed to continue for copper and zinc based on best technical judgement. Sector-specific benchmark monitoring is required for these pollutants by the Multi-Sector General Permit for industrial stormwater.

Flow Rate, Oil and Grease, and Temperature
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Outfall 006

pH
Limits proposed for pH are based on provisions of OAC 3745-1-35.

Antimony, Arsenic, Barium, Bis(2-ethylhexyl) Phthalate, Boron, Cadmium, Cobalt, Diethyl Phthalate, Fluoride, Iron, Mercury, Nickel, Nitrate+Nitrite, Selenium, Strontium, Tin, and Total Filterable Residue
The Ohio EPA risk assessment (Table 12) places antimony, arsenic, barium, bis(2-ethylhexyl) phthalate, boron, chromium, cobalt, diethyl phthalate, fluoride, iron, mercury, nickel, nitrate+nitrite, selenium, strontium, tin, and total filterable residue in groups 2 and 3. This placement, as well as the data in Table 4, Table 5, and Table 6, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed. Monitoring is proposed to be removed for fluoride and mercury.

Copper and Zinc
Monitoring is proposed to continue for copper and zinc based on best technical judgement. Sector-specific benchmark monitoring is required for these pollutants by the Multi-Sector General Permit for industrial stormwater.

Flow Rate, Temperature, Total Suspended Solids (TSS), and Oil and Grease
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Hardness
Based on best technical judgment, monitoring is proposed for hardness. The purpose of the monitoring is to obtain data on the hardness of the effluent for determining metals criteria to apply within the mixing zone.

Internal Monitoring Station 602/620

Ammonia, Chromium, Cyanide, Fluoride, Lead, Nickel, Oil and Grease, pH, Total Suspended Solids (TSS), and Zinc
Federal effluent guideline limitations (ELGs) are based on available treatment technology. Monitoring and limits are proposed based on the federal effluent limitation guidelines (ELGs) found in 40 CFR Part 471. ELGs are applied at this outfall to ensure that these treatment standards are met prior to combining with other waste streams. If monitoring was not done at this location, it would not be possible to verify compliance with these standards due to dilution. Federal rules at 40 CFR 125.3(f) prohibit attaining these standards by dilution.

Applicable limits are listed in Attachment 1 and have been derived from the following sections of the ELGs, based on available technology:

40 CFR Part 471.61 – Best practicable control technology currently available (BPT)
40 CFR Part 471.62 – Best available technology economically achievable (BAT)
40 CFR Part 471.63 – New source performance standards (NSPS)

Requirements for internal monitoring station 602 apply when there are discharges resulting from processes covered by 40 CFR 471, Subpart F – Titanium. Internal monitoring station 620 will only be utilized when there are also discharges resulting from processes covered by 40 CFR 471, Subpart I – Zirconium/Hafnium forming.

Treatment technology-based limits are based on milligrams of pollutant allowed to be discharged per off-kilogram of production. The plant production rates used are the maximum 30-day average rates for the past five years. The mass limits are found in 40 CFR 471 and the loadings are calculated by multiplying these values by the production and converting the resulting mass back to kilograms.

Using 30-day TSS limits for outfall 602 as an example, the TSS limits were calculated:

Process	*Calculation*	*Result (kg/day)*
4000 Ton Press [471.63(h)]	(1.95 mg/off-kg X 164,031 kg/day)/1000000	0.278
Descale pickle [471.61(m)/62(m)]	(4.06 mg/off-kg X 52137 kg/day)/1000000	0.191
Strip pickle [471.61(m)/62(m)]	(4.06 mg/off-kg X 15067 kg/day)/1000000	0.058
Descale pickle [471.61(n)/62(n)]	(570 mg/off-kg X 52137 kg/day)/1000000	26.8
Strip pickle [471.61(n)/62(n)]	(570 mg/off-kg X 15067 kg/day)/1000000	8.147
Sheet and Plate pickle [471.63(m)]	(4.06 mg/off-kg X 151779 kg/day)/1000000	0.89
Sheet and Plate pickle [471.63(n)]	(57 mg/off-kg X 151779 kg/day)/1000000	12.5
Descale and strip scrub [471.61(o)/62(o)]	(41.8 mg/off-kg X 67204 kg/day)/1000000	2.563
Sheet scrub [471.63(o)]	(4.18 mg/off-kg X 219259 kg/day)/1000000	0.917
Continuous vacuum annealing spent bath [471.63(p)]	(4.68 mg/off-kg X 27339 kg/day)/1000000	0.136
Continuous vacuum annealing rinse [471.63(q)]	(5.38 mg/off-kg X 27339 kg/day)/1000000	0.157
Misc. wastewaters [471.63(x)]	(0.63 mg/off-kg X 410353 kg/day)/1000000	0.285
Total		**52.9**

The complete set of calculations for outfalls 602 and 620 can be found in Attachment 1.

Flow Rate and Temperature
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Whole Effluent Toxicity Reasonable Potential
Based on evaluating the WET data presented in Table 8 and other pertinent data under the provisions of OAC 3745-33-07(B), TIMET is placed in Category 4 with respect to WET. The monitoring requirement is proposed to be removed from the permit.

Additional Monitoring Requirements
Additional monitoring requirements proposed at the final effluent, influent and upstream/downstream stations are included for all facilities in Ohio and vary according to the type and size of the discharge. In addition to

permit compliance, this data is used to assist in the evaluation of effluent quality and treatment plant performance and for designing plant improvements and conducting future stream studies.

OTHER REQUIREMENTS

Compliance Schedule

New Limits - A 48-month compliance schedule is proposed for TIMET to meet the new daily max concentration limits for copper at outfalls 001 and 002. A 36-month compliance schedule is proposed for TIMET to meet the new daily max concentration limit for total residual chlorine at outfall 001. Details are in Part I, C of the permit.

Outfall Signage

Part II of the permit includes requirements for the permittee to place and maintain a sign at each outfall to the Ohio River and Jeddo Run providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Public Water Supply Notification

An addition to OAC 3745-33-08 requires that permittees discharging wastewater within ten miles of a downstream public water supply intake located on the same waterway must develop and implement notification procedures in conjunction with the downstream public water supply operator in the event of a spill, separate sewer overflow, bypass or upset that reaches waters of the state. Since the City of Steubenville and City of Weirton (WV) operate public water supply intakes within ten miles downstream from TIMET, an item in Part II of the permit requires the development of notification procedures within six months after the effective date of the permit.

Part III

Part III of the permit details standard conditions that include monitoring, reporting requirements, compliance responsibilities, and general requirements.

Stormwater Compliance

Parts IV, V, and VI have been included with the draft permit to ensure that any stormwater flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, TIMET may seek permit coverage under the general permit for industrial stormwater (permit # OHR000007) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) TIMET submits a Notice of Intent (NOI) for coverage under the general permit for industrial stormwater or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Benchmark monitoring for copper and zinc for outfalls 001, 002, 003, 004, and 006 is proposed in accordance with the stormwater language. See Part V for more details.

Figure 1. Location of TIMET

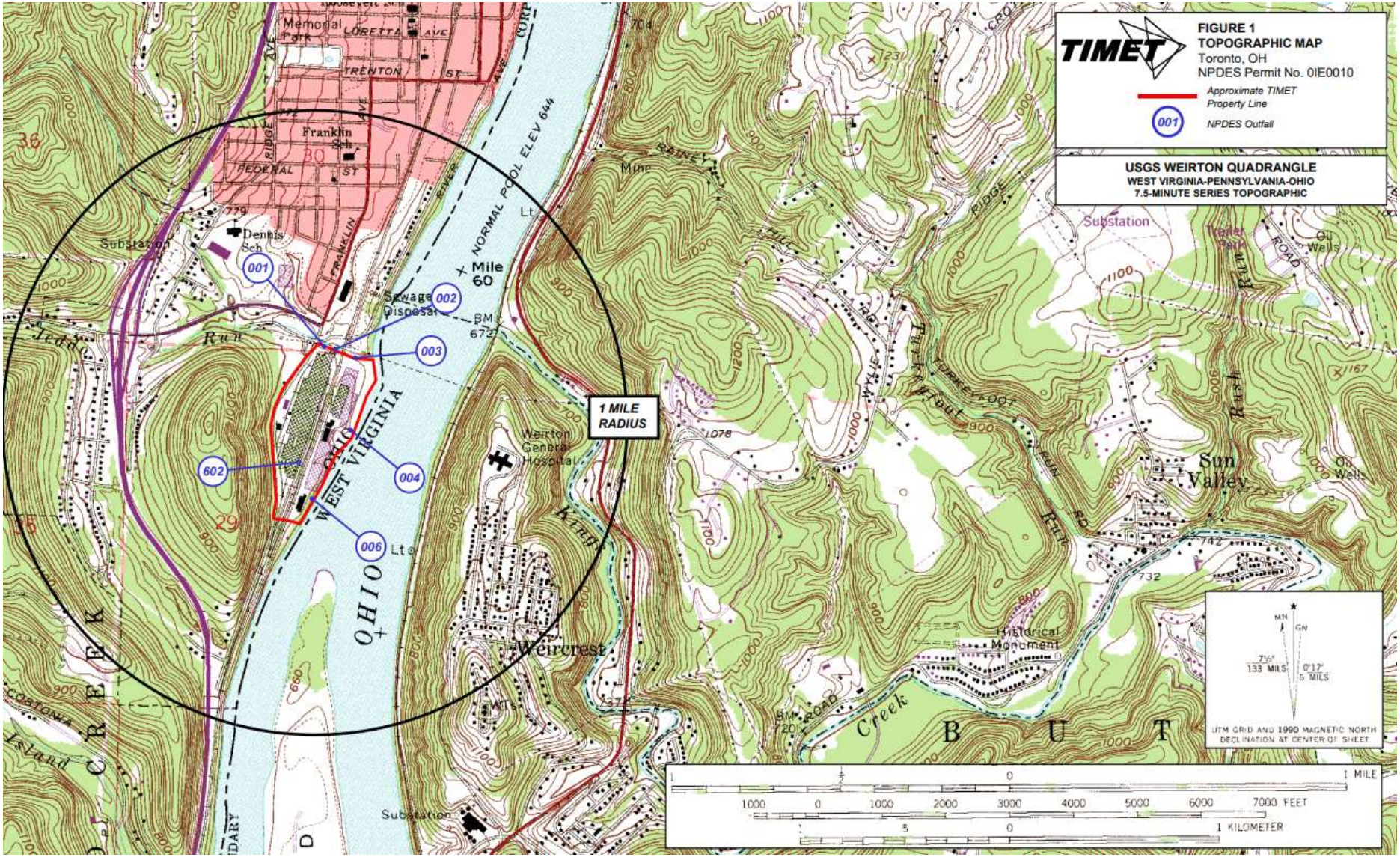
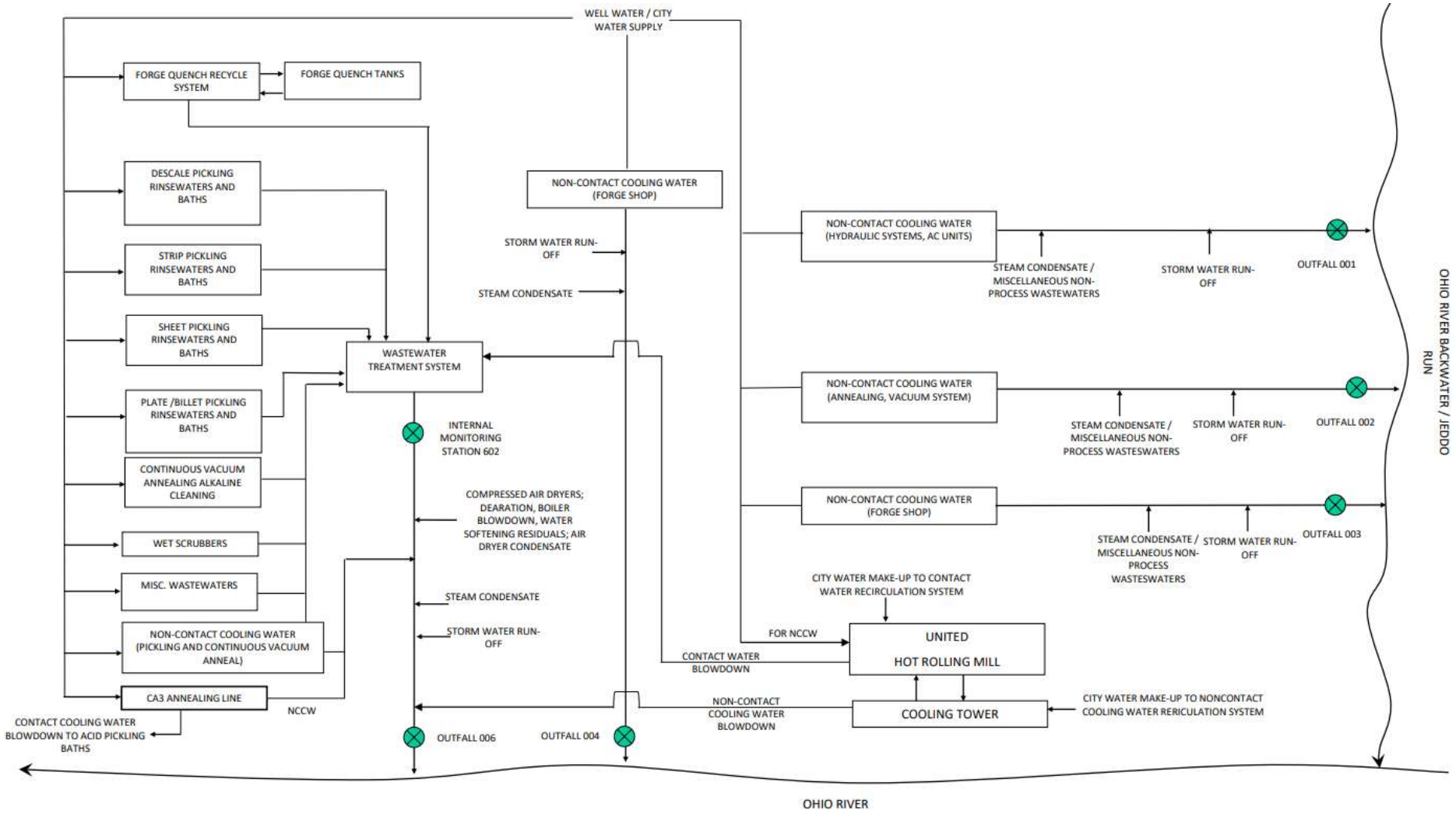


Figure 2. Water Balance Diagram



*Outfall 002 no longer receives process wastewater. This discharge is now permitted as a stormwater-only outfall.

Table 1. Monitoring Stations, Wastewater Sources, and Discharge Points

Station #	Wastewater Source	Discharge/ Receiving Stream
001	Non-contact cooling water, storm water, steam condensate, misc. non-process wastewater	Jeddo Run
002	Stormwater	Jeddo Run
003	Non-contact cooling water, storm water, steam condensate, misc. non-process wastewater	Jeddo Run
004	Non-contact cooling water, storm water, steam condensate, misc. non-process wastewater	Ohio River
006	Non-contact cooling water, wastewater treatment plant (Outfall 602), steam condensate, storm water run-off, compressed air dryers, deaeration, boiler blowdown, water softener, air dryer condensate, misc. non-process wastewater	Ohio River
602	Forge quench blowdown, surface treatment spent baths and rinse waters (descale pickling, strip pickling, sheet pickling, plate/ billet pickling), alkaline cleaning spent bath and rinse waters (continuous vacuum annealing), wet air pollution control scrubbers, miscellaneous wastewaters	Outfall 006
620	Includes lists shown in 602. This monitoring station is used in lieu of 602 when wastewaters include zirconium-hafnium pickle line bath and rinse waters.	Outfall 006

Table 2. Effluent Limit Violations

Outfall	Parameter	2018	2019	2020	2021	2022	2023
	Oil and Grease	0	0	2	0	0	0
001	pH	0	2	3	0	0	1
002	pH	0	0	1	0	1	0
	Oil and Grease	0	0	0	0	1	0
006	pH	0	0	0	1	0	0
Total		0	2	6	1	2	1

DMR data reported March 2018 – February 2023

Table 3. Average Annual Effluent Flow Rates

	Flow Rate (Million Gallons per Day)					
Outfall	Year	# obs	Average	Median	95th Percentile	Maximum
	2018	306	0.028533	0.017	0.0685	0.655
	2019	365	0.022523	0.018	0.069	0.135
	2020	366	0.028711	0.022	0.07775	0.45
	2021	365	0.087052	0.018	0.5706	0.999
	2022	365	0.024915	0.02	0.0686	0.188
001	2023	59	0.020186	0.016	0.0494	0.081
	2018	306	0.002281	0.001	0.007	0.038
	2019	365	0.013137	0.001	0.0668	0.48
	2020	366	0.003306	0.001	0.009	0.135
	2021	365	0.004518	0.002	0.007	0.56
	2022	365	0.006923	0.001	0.0248	0.174
002	2023	59	0.003458	0.003	0.0062	0.025
	2018	306	0.140611	0.131	0.2075	1.307
	2019	365	0.772556	0.221	0.4894	192
	2020	366	0.130617	0.079	0.43	0.768
	2021	365	0.394734	0.183	1.172	3.995
	2022	365	0.392849	0.37	0.8096	1.007
003	2023	59	0.218102	0.218	0.247	0.257
	2018	306	0.663775	0.65	0.72925	0.993
	2019	365	0.662847	0.65	0.7304	0.809
	2020	366	0.759981	0.66	1.255	3.02
	2021	365	0.744082	0.65	1.096	2.66
	2022	365	0.768266	0.65	1.358	3.26
004	2023	59	0.749322	0.65	1.133	1.61
	2018	306	0.537122	0.521	0.9165	1.834
	2019	365	0.39614	0.367	0.663	1.074
	2020	366	0.32609	0.2975	0.56275	1.439

Outfall	Flow Rate (Million Gallons per Day)					
	Year	# obs	Average	Median	95th Percentile	Maximum
006	2021	365	0.396188	0.295	0.8914	1.229
	2022	365	0.353247	0.301	0.689	1.563
	2023	59	0.361237	0.307	0.8248	0.937

MGD = million gallons per day
DMR data reported March 2018 – February 2023

Table 4. Effluent Characterization Based on Form 2C Data

Parameter	Units	Concentration
Outfall 001		
Aluminum	µg/L	410
Antimony	µg/L	0.35
Arsenic	µg/L	0.53
Barium	µg/L	37
Boron	µg/L	79
Chlorine, Total Residual	mg/L	0.12
Chromium	µg/L	1.9
Cobalt	µg/L	0.12
Fluoride	mg/L	1.4
Iron	µg/L	190
Lead	µg/L	0.5
Manganese	µg/L	14
Mercury	ng/L	1.5
Molybdenum	µg/L	2.7
Nickel	µg/L	0.98
Nitrate + Nitrite	mg/L	2.6
Sulfate	mg/L	65
Tin	µg/L	2.9
Titanium	µg/L	29
Outfall 003		
Aluminum	µg/L	13
Arsenic	µg/L	0.42
Barium	µg/L	88
Boron	µg/L	90
Chromium	µg/L	0.73
Cobalt	µg/L	0.12
Fluoride	mg/L	0.6
Iron	µg/L	52
Manganese	µg/L	200
Mercury	ng/L	0.62
Molybdenum	µg/L	2.3
Nickel	µg/L	0.62
Nitrate + Nitrite	mg/L	1.3
Sulfate	mg/L	72
Tin	µg/L	4.6
Titanium	µg/L	6.9

Parameter	Units	Concentration
Outfall 004		
Barium	µg/L	80
Boron	µg/L	82
Cobalt	µg/L	0.12
Fluoride	mg/L	0.53
Iron	µg/L	41
Manganese	µg/L	150
Mercury	ng/L	0.29
Molybdenum	µg/L	1.6
Nickel	µg/L	0.39
Sulfate	mg/L	70
Tin	µg/L	3.4
Outfall 006		
Aluminum	µg/L	140
Arsenic	µg/L	0.45
Barium	µg/L	58
Boron	µg/L	110
Cobalt	µg/L	0.16
Iron	µg/L	80
Molybdenum	µg/L	10
Nickel	µg/L	0.83
Nitrate + Nitrite	mg/L	27
Sulfate	mg/L	67
Tin	µg/L	3.4
Titanium	µg/L	9.8
Zinc	µg/L	6.4

Table 5. Effluent Characterization for Outfall 006 Using Ohio EPA Data

Parameter	Units	11/1/2022
Aluminum	mg/L	188
Ammonia	mg/L	2.14
Antimony	µg/L	0.483
Arsenic	µg/L	0.431
Barium	µg/L	51.2
Bis(2-ethylhexyl) Phthalate	µg/L	1.82
Boron	µg/L	94.8
Cadmium	µg/L	0.050
Chloride	mg/L	158

Chromium	µg/L	0.438
Cobalt	µg/L	0.134
Copper	µg/L	3.02
Diethyl Phthalate	µg/L	2.7
Fluoride	mg/L	3.57
Iron	µg/L	97
Lead	µg/L	0.188
Manganese	µg/L	56.4
Mercury	µg/L	AA
Nickel	µg/L	5.77
Nitrate + Nitrite	mg/L	12.9
Phosphorus	mg/L	0.127
Selenium	µg/L	0.916
Strontium	µg/L	270
Sulfate	mg/L	64.6
Total Filterable Residue	mg/L	532
Zinc	µg/L	10

AA = not-detected (analytical method detection limit)
NA = not applicable

Table 6. Effluent Characterization Using Self-Monitoring Data

Outfall	Parameter	Unit	Current Limits		# Obs	Percentiles		Data Range
			30 Day	Daily		50th	95th	
001	Water Temperature	°C	Monitoring Only		236	21.6	27.8	3.8 - 30.5
	pH	S.U.	--	6.5 - 9.0	236	8.06	8.92	6.75 - 9.54
	Total Suspended Solids	mg/L	Monitoring Only		20	7.8	132	0 - 170
	Oil and Grease	mg/L	15	20	59	< 1.4	6.33	0 - 24.3
	Hardness, Total (CaCO3)	mg/L	Monitoring Only		20	85	250	0 - 620
	Zinc, TR	µg/L	Monitoring Only		20	45.5	511	23 - 1100
	Copper, TR	µg/L	Monitoring Only		20	< 4.1	46.8	0 - 81
	Flow Rate	MGD	Monitoring Only		1798	.019	.0912	.001 - .999
002	Water Temperature	°C	Monitoring Only		109	14.8	25.3	.1 - 27.3
	pH	S.U.	--	6.5 - 9.0	109	7.93	8.72	6.38 - 9.3
	Oil and Grease	mg/L	Monitoring Only		54	< 1.4	< 1.4	0 - 9.9
	Hardness, Total (CaCO3)	mg/L	Monitoring Only		53	120	200	0 - 260
	Zinc, TR	µg/L	Monitoring Only		54	56	234	0 - 380
	Copper, TR	µg/L	Monitoring Only		55	44	129	0 - 210
	Flow Rate	MGD	Monitoring Only		1798	.001	.0152	.001 - .56
003	Water Temperature	°C	Monitoring Only		234	18.8	25.3	2.9 - 29.7
	pH	S.U.	--	6.5 - 9.0	234	7.95	8.24	6.76 - 8.81
	Total Suspended Solids	mg/L	Monitoring Only		20	3.4	15.9	0 - 32
	Oil and Grease	mg/L	15	20	20	< 1.4	.27	0 - 5.4
	Hardness, Total (CaCO3)	mg/L	Monitoring Only		59	210	241	15 - 570
	Zinc, TR	µg/L	Monitoring Only		20	< 2.7	40.7	0 - 54
	Copper, TR	µg/L	Monitoring Only		104	< 4.1	< 4.1	0 - 55
	Flow Rate	MGD	Monitoring Only		1798	.157	.799	.001 - 192
004	Water Temperature	°C	Monitoring Only		222	17.8	24.1	10.1 - 27
	pH	S.U.	--	6.5 - 9.0	222	7.8	8.31	6.6 - 8.93
	Oil and Grease	mg/L	15	20	58	< 1.4	< 1.4	0 - 7.1
	Zinc, TR	µg/L	Monitoring Only		19	--	--	< 2.7
	Copper, TR	µg/L	Monitoring Only		19	--	--	< 4.1
	Flow Rate	MGD	Monitoring Only		1798	.65	1.06	.65 - 3.26
006	Water Temperature	°C	Monitoring Only		234	22.3	28.4	7.87 - 185
	pH	S.U.	--	6.5 - 9.0	120	7.8	8.54	6.62 - 21.3
	Total Suspended Solids	mg/L	Monitoring Only		116	3.6	25.8	0 - 94
	Oil and Grease	mg/L	15	20	234	< 1.4	6.1	0 - 29
	Hardness, Total (CaCO3)	mg/L	Monitoring Only		116	260	493	10 - 1100
	Fluoride, Total (F)	mg/L	Monitoring Only		60	4.1	10.1	1.1 - 18
	Manganese, Total (Mn)	µg/L	Monitoring Only		117	97	492	0 - 7100
	Copper, TR	µg/L	Monitoring Only		21	< 4.1	< 4.1	0 - 3
	Flow Rate	MGD	Monitoring Only		1798	.337	.801	.003 - 1.83
	Mercury, Total	ng/L	Monitoring Only		5	.76	1.78	0 - 1.9

Outfall	Parameter	Unit	Current Limits		# Obs	Percentiles		Data Range
			30 Day	Daily		50th	95th	
	Acute Toxicity, *Ceriodaphnia dubia*	TUa	Monitoring Only		5	< .2	.48	0 - .6
	Acute Toxicity, *Pimephales promelas*	TUa	Monitoring Only		5	< .2	.16	0 - .2

* = For minimum pH, 5th percentile shown in place of 50th percentile.
DMR data reported March 2018 – February 2023

Table 7. Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Outfall 001					
Aluminum	µg/L	1	1	1856	2542
Antimony	µg/L	1	1	1.584	2.17
Arsenic - TR	µg/L	1	1	2.399	3.286
Barium	µg/L	1	1	167.5	229.4
Boron	µg/L	1	1	357.6	489.8
Chlorine, Total Residual	mg/L	1	1	0.5431	0.744
Chromium - TR	µg/L	1	1	8.599	11.78
Cobalt	µg/L	1	1	0.5431	0.744
Copper - TR	µg/L	20	2	82.78	113.4
Fluoride	mg/L	1	1	6.336	8.68
Iron - TR	µg/L	1	1	859.9	1178
Lead - TR	µg/L	1	1	2.263	3.1
Manganese - TR	µg/L	1	1	63.36	86.8
Mercury	ng/L	1	1	6.789	9.3
Molybdenum	µg/L	1	1	12.22	16.74
Nickel - TR	µg/L	1	1	4.435	6.076
Nitrate-N + Nitrite-N	mg/L	1	1	11.77	16.12
Oil and Grease	mg/L	59	5	5.256	7.2
Sulfates	mg/L	1	1	294.2	403
Tin	µg/L	1	1	13.13	17.98
Titanium	µg/L	1	1	131.3	179.8
Zinc - TR	µg/L	19	19	165.4	287.1
Outfall 002					
Copper - TR	µg/L	56	37	124.7	197.6
Zinc - TR	µg/L	55	50	173.1	275.3
Outfall 003					
Aluminum	µg/L	1	1	58.84	80.6
Arsenic - TR	µg/L	1	1	1.901	2.604
Barium	µg/L	1	1	398.3	545.6
Boron	µg/L	1	1	407.3	558
Chromium - TR	µg/L	1	1	3.304	4.526
Cobalt	µg/L	1	1	0.5431	0.744
Copper - TR	µg/L	105	1	36.14	49.5
Fluoride	mg/L	1	1	2.716	3.72
Iron - TR	µg/L	1	1	235.4	322.4
Manganese - TR	µg/L	1	1	905.2	1240
Mercury	ng/L	1	1	2.806	3.844
Molybdenum	µg/L	1	1	10.41	14.26
Nickel - TR	µg/L	1	1	2.806	3.844
Nitrate-N + Nitrite-N	mg/L	1	1	5.884	8.06

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Oil and Grease	mg/L	20	1	5.519	7.56
Sulfates	mg/L	1	1	325.9	446.4
Tin	µg/L	1	1	20.82	28.52
Titanium	µg/L	1	1	31.23	42.78
Zinc - TR	µg/L	20	6	55.19	75.6
Outfall 004					
Barium	µg/L	1	1	362.1	496
Boron	µg/L	1	1	371.1	508.4
Cobalt	µg/L	1	1	0.5431	0.744
Copper - TR	µg/L	19	0	--	--
Fluoride	mg/L	1	1	2.399	3.286
Iron - TR	µg/L	1	1	185.6	254.2
Manganese - TR	µg/L	1	1	678.9	930
Mercury	ng/L	1	1	1.313	1.798
Molybdenum	µg/L	1	1	7.242	9.92
Nickel - TR	µg/L	1	1	1.765	2.418
Oil and Grease	mg/L	59	1	5.183	7.1
Sulfates	mg/L	1	1	316.8	434
Tin	µg/L	1	1	15.39	21.08
Zinc - TR	µg/L	19	0	--	--
Outfall 006					
Aluminum	µg/L	2	2	521.5	714.4
Antimony	µg/L	2	1	1.34	1.835
Arsenic - TR	µg/L	2	2	1.248	1.71
Barium	µg/L	2	2	160.9	220.4
Bis(2-ethylhexyl) Phthalate	µg/L	1	1	8.237	11.28
Boron	µg/L	2	2	305.1	418
Cadmium - TR	µg/L	1	1	0.2263	0.31
Chlorides	mg/L	1	1	715.1	979.6
Cobalt	µg/L	2	2	0.4438	0.608
Copper - TR	µg/L	22	2	3.891	5.33
Diethyl phthalate	µg/L	2	1	7.49	10.26
Fluoride	mg/L	62	62	8.6	12.73
Iron - TR	µg/L	2	2	269.1	368.6
Manganese - TR	µg/L	120	119	441.9	675.6
Mercury	ng/L	5	3	3.19	4.37
Nickel - TR	µg/L	2	2	16.01	21.93
Nitrate-N + Nitrite-N	mg/L	2	2	74.9	102.6
Oil and Grease	mg/L	237	19	4.957	6.79
Sulfates	mg/L	2	2	185.9	254.6
Selenium - TR	µg/L	2	1	2.541	3.481
Strontium	µg/L	1	1	1222	1674
Tin	µg/L	1	1	15.39	21.08

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Titanium	µg/L	1	1	44.35	60.76
Total Filterable Residue	mg/L	1	1	2408	3298
Zinc - TR	µg/L	2	2	27.74	38

MDL = analytical method detection limit
PEQ = projected effluent quality

Table 8. Summary of Acute and Chronic Toxicity Results

	Ceriodaphnia Dubia	*Pimephales Promelas*
Date	**Acute (Tu_a)**	**Acute (Tu_a)**
8/2/2018	AA (0.2)	0.2
8/1/2019	AA (0.2)	AA (0.2)
8/1/2020	AA (0.2)	AA (0.2)
8/1/2021	0.6	AA (0.2)
8/4/2022	AA (0.2)	AA (0.2)
11/2/2022	AA (0.2)	AA (0.2)

AA = non-detection; analytical method detection limit of 0.2 TU_a, 1.0 TU_c
TU_a = acute toxicity unit

Table 9. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Aluminum	µg/L	--	--	--	--	--
Antimony	µg/L	5.6	--	190	900	1800
Arsenic - TR	µg/L	50	100	150	340	680
Barium	µg/L	1000	--	640	2700	--
Bis(2-ethylhexyl) Phthalate	µg/L	3.2[c]	--	8.4	1100	2100
Boron	µg/L	--	--	3900	33000	65000
Cadmium - TR	µg/L	--	50	2.5	4.5	--
Chlorides	mg/L	--	--	--	--	--
Chlorine, Total Residual	mg/L	--	--	0.011	0.019	0.038
Chromium - TR	µg/L	--	100	86	1800	--
Cobalt	µg/L	--	--	24	220	440
Copper - TR	µg/L	--	500	9.3	14	--
Diethyl phthalate	µg/L	600	--	220	980	2000
Fluoride	mg/L	1	2	--	--	--
Iron - TR	µg/L	--	5000	--	--	--
Lead - TR	µg/L	--	100	6.4	120	--
Manganese - TR	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	20000	190000	370000
Nickel - TR	µg/L	610	200	52	470	--
Nitrate-N + Nitrite-N	mg/L	10	100	--	--	--
Selenium - TR	µg/L	170	50	5	62	--
Strontium	µg/L	--	--	21000	54000	--
Sulfates	mg/L	--	--	--	--	--
Tin	µg/L	--	--	180	1600	3200
Titanium	µg/L	--	--	--	--	--
Total Filterable Residue	mg/L	--	--	1500	--	--
Zinc - TR	µg/L	7400	25000	120	120	--
Jeddo Run IMZM						
Barium	µg/L	--	--	--	--	10000
Chromium - TR	µg/L	--	--	--	--	6400
Copper - TR	µg/L	--	--	--	--	54
Nickel - TR	µg/L	--	--	--	--	1700
Zinc - TR	µg/L	--	--	--	--	430
Ohio River IMZM						
Barium	µg/L	--	--	--	--	5500
Copper - TR	µg/L	--	--	--	--	28
Nickel - TR	µg/L	--	--	--	--	940
Zinc - TR	µg/L	--	--	--	--	240
Outfall 004 IMZM						

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agri-culture	Aquatic Life		
Barium	µg/L	--	--	--	--	11000
Copper - TR	µg/L	--	--	--	--	58
Nickel - TR	µg/L	--	--	--	--	1800
Zinc - TR	µg/L	--	--	--	--	460
Outfall 006 IMZM						
Barium	µg/L	--	--	--	--	13000
Cadmium - TR	µg/L	--	--	--	--	27
Copper - TR	µg/L	--	--	--	--	69
Nickel - TR	µg/L	--	--	--	--	2100
Selenium - TR	µg/L	--	--	--	--	120
Strontium	µg/L	--	--	--	--	380000
Zinc - TR	µg/L	--	--	--	--	540

Table 10. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
7Q10	cfs	annual	5880	ORSANCO PCS; 2019
Harmonic Mean	cfs	annual	20500	ORSANCO PCS; 2019
Mixing Assumption	%	average	10	(***WLAs for non-carcinogens are developed using 100 percent of the 7Q10.)
		maximum	1	
Hardness, Ohio River	mg/L	annual	100	ORSANCO bimonthly data; Pike Island; 3/18-11/22; median
Hardness, Jeddo Run	mg/L	annual	202	Flow-weighted avg of median effluent values from outfalls 001/002/003
Hardness, Outfall 004	mg/L	annual	215	TIMET Supplemental Effluent Data; n=4; 2023; median
Hardness, Outfall 006	mg/L	annual	260	Effluent hardness data; n=118; median
Outfall 001 flow	cfs	annual	0.076	95th Percentile of Monthly Flow Averages
Outfall 002 flow	cfs	annual	0.034	95th Percentile of Monthly Flow Averages
Outfall 003 flow	cfs	annual	1.41	95th Percentile of Monthly Flow Averages
Outfall 004 flow	cfs	annual	1.28	95th Percentile of Monthly Flow Averages
Outfall 006 flow	cfs	annual	1.12	95th Percentile of Monthly Flow Averages
Background Water Quality				
Aluminum	µg/L		223	ORSANCO; 2018-2022; n=27; 0<MDL; Clean Metals (New Cumberland); median
Antimony	µg/L		0.1	ORSANCO; 2018-2022; n=27; 13<MDL; Clean Metals (New Cumberland); median
Arsenic - TR	µg/L		0.5	ORSANCO; 2018-2022; n=27; 23<MDL; Clean Metals (New Cumberland); median
Barium	µg/L		37	ORSANCO; 2018-2022; n=27; 0<MDL; Clean Metals (New Cumberland); median
Bis(2-ethylhexyl) Phthalate	µg/L		0	No representative data available.
Boron	µg/L		0	No representative data available.
Cadmium - TR	µg/L		0	ORSANCO; 2018-2022; n=27; 27<MDL; Clean Metals (New Cumberland)
Chlorides	mg/L		28.2	ORSANCO; 2000-2022; n=136; 0<MDL; Bimonthly data (New Cumberland); median
Chlorine, Total Residual	mg/L		0	No representative data available.
Chromium - TR	µg/L		0.5	ORSANCO; 2018-2022; n=27; 22<MDL; Clean Metals (New Cumberland); median
Cobalt	µg/L		0	No representative data available.
Copper - TR	µg/L		2.6	ORSANCO; 2018-2022; n=27; 1<MDL; Clean Metals (New Cumberland); median
Diethyl phthalate	µg/L			No representative data available.
Fluoride	mg/L		0	No representative data available.
Iron - TR	µg/L		440	ORSANCO; 2018-2022; n=27; 0<MDL; Clean

Parameter	Units	Season	Value	Basis
				Metals (New Cumberland); median
Lead - TR	µg/L		0.5	ORSANCO; 2018-2022; n=27; 22<MDL; Clean Metals (New Cumberland); median
Manganese - TR	µg/L		70.9	ORSANCO; 2018-2022; n=27; 0<MDL; Clean Metals (New Cumberland); median
Mercury	ng/L		0.75	ORSANCO; 2018-2022; n=27; 14<MDL; Clean Metals (New Cumberland); median
Molybdenum	µg/L		0	No representative data available.
Nickel - TR	µg/L		2.37	ORSANCO; 2018-2022; n=27; 0<MDL; Clean Metals (New Cumberland); median
Nitrate-N + Nitrite-N	mg/L		0.85	ORSANCO; 2000-2022; n=134; 2<MDL; Bimonthly data (New Cumberland); median
Selenium - TR	µg/L		0	ORSANCO; 2018-2022; n=27; 27<MDL; Clean Metals (New Cumberland)
Strontium	µg/L		116	ORSANCO; 2018-2022; n=27; 0<MDL; Clean Metals (New Cumberland); median
Sulfates	mg/L		61.5	ORSANCO; 2000-2022; n=136; 0<MDL; Bimonthly data (New Cumberland); median
Tin	µg/L		0	No representative data available.
Titanium	µg/L		0	No representative data available.
Total Filterable Residue	mg/L		190	ORSANCO; 2000-2022; n=64; 0<MDL; Bimonthly data (New Cumberland); median
Zinc - TR	µg/L		4.62	ORSANCO; 2018-2022; n=27; 0<MDL; Clean Metals (New Cumberland); median

MDL = analytical method detection limit
n = number of samples

Table 11. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agri-culture	Aquatic Life		
Outfalls 001, 002, 003 Interactive						
Aluminum	µg/L	--	--	--	--	--
Arsenic - TR	µg/L	191814	134489	58067	13492	680
Barium	µg/L	3731689	--	234244	105865	10000
Boron	µg/L	--	--	1514771	1311429	65000
Chromium - TR	µg/L	--	134489	33209	71513	6400
Cobalt	µg/L	--	--	9322	8743	440
Copper - TR	µg/L	--	672308	2605	456	54
Fluoride	mg/L	3875	2703	--	--	--
Iron - TR	µg/L	--	6163914	--	--	--
Manganese - TR	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Molybdenum	µg/L	--	--	7768056	7550654	370000
Nickel - TR	µg/L	2354586	267127	19279	18586	1700
Nitrate-N + Nitrite-N	mg/L	35457	134016	--	--	--
Sulfates	mg/L	--	--	--	--	--
Tin	µg/L	--	--	69913	63584	3200
Zinc - TR	µg/L	28657311	33784737	44819	4590	430
Outfalls 001 and 002 Interactive						
Antimony	µg/L	426576	--	1473021	698847	1800
Chlorine, Total Residual	mg/L	--	--	85	15	0.038
Lead - TR	µg/L	--	2690566	45766	92802	600
Titanium	µg/L	--	--	--	--	--
Outfalls 001 and 003 Interactive						
Titanium	µg/L	--	--	--	--	--
Outfall 001						
Chlorine, Total Residual	mg/L	--	--	85	15	0.038
Outfalls 004 and 006 Interactive						
Barium	µg/L	2359073	--	148295	67908	--
Boron	µg/L	--	--	958883	841062	65000
Cobalt	µg/L	--	--	5901	5607	440
Fluoride	mg/L	2450	1709	--	--	--
Iron - TR	µg/L	--	3897891	--	--	--
Manganese - TR	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Nickel - TR	µg/L	1488498	168918	12205	11921	--
Sulfates	mg/L	--	--	--	--	--

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Tin	µg/L	--	--	44256	40779	3200
Outfall 004						
Barium	µg/L	--	--	--	--	11000
Copper	µg/L	--	--	--	--	58
Molybdenum	µg/L	--	--	9177452	8889580	370000
Nickel	µg/L	--	--	--	--	1800
Zinc	µg/L	--	--	--	--	460
Outfall 006						
Aluminum	µg/L	--	--	--	--	--
Antimony	µg/L	28956	--	100146	48267	1800
Arsenic - TR	µg/L	260600	182693	78841	18210	680
Bis(2-ethylhexyl) Phthalate	µg/L	5876	--	4430	59000	2100
Cadmium - TR	µg/L	--	91805	1318	241	27
Chlorides	mg/L	--	--	--	--	--
Copper - TR	µg/L	--	913283	3536	614	69
Diethyl phthalate	µg/L	3158777	--	116020	52564	2000
Nitrate-N + Nitrite-N	mg/L	48172	182051	--	--	--
Selenium - TR	µg/L	894987	91805	2637	3325	120
Strontium	µg/L	--	--	11013563	2890254	380000
Titanium	µg/L	--	--	--	--	--
Total Filterable Residue	mg/L	--	--	691035	--	--
Zinc - TR	µg/L	38933937	45894241	60852	6193	540

Table 12. Parameter Assessment

Outfall 001

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Aluminum	Manganese - TR	Sulfates
Titanium		

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.
WLA not required. No limit recommended; monitoring optional.

Arsenic - TR	Boron	Chromium - TR
Cobalt	Iron - TR	Molybdenum
Nickel - TR	Tin	

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Antimony	Barium	Fluoride
Lead - TR	Nitrate-N + Nitrite-N	

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or
PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Mercury	Zinc - TR

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

		Recommended Effluent Limits	
Parameter	*Units*	*Average*	*Maximum*
Chlorine, Total Residual	mg/L	--	0.038
Copper - TR	µg/L	--	54

PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Outfall 003

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Aluminum	Manganese - TR	Sulfates
Titanium		

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.
WLA not required. No limit recommended; monitoring optional.

Arsenic - TR	Boron	Chromium - TR
Cobalt	Iron - TR	Mercury
Molybdenum	Nickel - TR	Tin

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Barium	Fluoride	Nitrate-N + Nitrite-N
Zinc - TR		

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or
PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Copper - TR

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

		Recommended Effluent Limits	
Parameter	*Units*	*Average*	*Maximum*

No parameters fit this group

Outfall 004

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Manganese - TR	Sulfates

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.
WLA not required. No limit recommended; monitoring optional.

Boron	Cobalt	Copper - TR
Iron - TR	Mercury	Molybdenum
Nickel - TR	Tin	Zinc - TR

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Barium	Fluoride

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or
PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

No parameters fit this group

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

		Recommended Effluent Limits	
Parameter	*Units*	*Average*	*Maximum*

No parameters fit this group

Outfall 006

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Aluminum	Manganese - TR	Sulfates
Titanium	Chlorides	

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.
WLA not required. No limit recommended; monitoring optional.

Antimony	Arsenic - TR	Boron
Cadmium - TR	Cobalt	Diethyl Phthalate
Iron - TR	Strontium	Tin

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Barium	Bis(2-ethylhexyl) Phthalate	Copper - TR
Fluoride	Mercury	Nickel - TR
Nitrate-N + Nitrite-N	Selenium - TR	Total Filterable Residue
Zinc - TR		

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or
PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

No parameters fit this group

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

		Recommended Effluent Limits	
Parameter	*Units*	*Average*	*Maximum*

No parameters fit this group

Table 13. Final Effluent Limits

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Outfall 001						
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Suspended Solids	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Oil and Grease	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Hardness	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Zinc	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Copper	µg/L	--	54	--	--	WLA
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Chlorine, Total Residual	mg/L	--	0.038	--	--	WLA/IMZM
Outfall 002						
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Suspended Solids	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Oil and Grease	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Hardness	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Zinc	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Copper	µg/L	--	54	--	--	WLA
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Mercury	ng/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Outfall 003						
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Suspended Solids	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Oil and Grease	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Zinc	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Copper	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Outfall 004						
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Suspended Solids	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Oil and Grease	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Hardness	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Zinc	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Copper	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Outfall 006						
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Suspended Solids	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Oil and Grease	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Hardness	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Zinc	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Copper	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Internal Monitoring Station 602						
Total Suspended Solids	mg/L	--	--	52.17	109.41	BPT/BAT/NSPS
Oil and Grease	mg/L	--	--	31.91	53.30	BPT/BAT/NSPS
Ammonia	mg/L	--	--	43.55	99.14	BPT/BAT/NSPS
Cyanide, Total	mg/L	--	--	0.12	0.22	BPT/BAT/NSPS
Fluoride	mg/L	--	--	19.63	44.35	BPT/BAT/NSPS
Lead, Total	µg/L	--	--	0.15	0.30	BPT/BAT/NSPS
Zinc, Total	µg/L	--	--	0.60	1.09	BPT/BAT/NSPS
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH Range Excursion	Mins	--	60	--	--	40 CFR 401.17
pH, Maximum	S.U.	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BPT/BAT/NSPS
pH, Minimum	S.U.	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BPT/BAT/NSPS
pH Range Excursions, > 60 Minutes	#/Day	0	--	--	--	40 CFR 401.17
pH Range Excursions, Monthly Total Duration	Mins	446	--	--	--	40 CFR 401.17
Internal Monitoring Station 620						
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				
Total Suspended Solids	mg/L	--	--	45.57	95.92	BPT/BAT/NSPS
Oil and Grease	mg/L	--	--	28.06	46.69	BPT/BAT/NSPS
Ammonia	mg/L	--	--	42.31	96.22	BPT/BAT/NSPS
Cyanide, Total	mg/L	--	--	0.09	0.21	BPT/BAT/NSPS
Fluoride	mg/L	--	--	19.07	43.03	BPT/BAT/NSPS
Chromium, Total	µg/L	--	--	0.002	0.005	BPT/BAT/NSPS

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Lead, Total	µg/L	--	--	0.142	0.30	BPT/BAT/NSPS
Nickel, Total	µg/L	--	--	0.01	0.02	BPT/BAT/NSPS
Zinc, Total	µg/L	--	--	0.43	1.04	BPT/BAT/NSPS
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH Range Excursion	Mins	--	60	--	--	40 CFR 401.17
pH, Maximum	S.U.	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BPT/BAT/NSPS
pH, Minimum	S.U.	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BPT/BAT/NSPS
pH Range Excursions, > 60 Minutes	#/Day	0	--	--	--	40 CFR 401.17
pH Range Excursions, Monthly Total Duration	Mins	446	--	--	--	40 CFR 401.17

[b] Definitions:

BAT = Best Available Technology Economically Achievable, 40 CFR Part 471, "Subpart F – Titanium Forming Subcategory" and "Subpart I – Zirconium-Hafnium Forming Subcategory"
BPJ = Best Professional Judgment
BPT = Best Practicable Control Technology Currently Available, 40 CFR Part 471, "Subpart F – Titanium Forming Subcategory" and "Subpart I – Zirconium-Hafnium Forming Subcategory"
BTJ = Best Technical Judgment
CFR = Code of Federal Regulations
M = BEJ of Permit Guidance 2: Determination of Sampling Frequency Formula for Industrial Waste Discharges
NPDES = National Pollutant Discharge Elimination System
NSPS = New Source Performance Standards, 40 CFR Part 471, "Subpart F – Titanium Forming Subcategory" and "Subpart I – Zirconium-Hafnium Forming Subcategory"
OAC = Ohio Administrative Code
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (OAC 3745-33-07(A))
WLA = Wasteload Allocation procedures (OAC 3745-2)
WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum
WQS = Ohio Water Quality Standards (OAC 3745-1)

[c] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

Attachment 1. Applicable Federal Effluent Limitation Guidelines

Outfall 602 Effluent Guideline Calculations

4000 Ton press [471.63(h)]
Production (kg/day): 142648

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.012	0.00171	0.029	0.00414
Lead	0.02	0.00285	0.042	0.00599
Zinc	0.061	0.00870	0.146	0.02083
Ammonia	5.86	0.83592	13.3	1.89722
Fluoride	2.64	0.37659	5.95	0.84876
Oil & Grease	1.2	0.17118	2	0.28530
TSS	1.95	0.27816	4.1	0.58486
pH	7.5 to 10	NA	NA	NA

Sheet & Plate Pickle [471.63(m)]
Production (kg/day): 210829

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.025	0.00548	0.061	0.01337
Lead	0.042	0.00921	0.088	0.01929
Zinc	0.127	0.02785	0.304	0.06665
Ammonia	12.2	2.67496	27.7	6.07347
Fluoride	5.49	1.20373	12.4	2.71881
Oil & Grease	2.5	0.54815	4.16	0.91212
TSS	4.06	0.89019	8.53	1.87028
pH	7.5 to 10	NA	NA	NA

Descale pickle [471.61(m)/62(m)]
Production (kg/day): 47017

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.025	0.00118	0.061	0.00287
Lead	0.042	0.00197	0.088	0.00414
Zinc	0.127	0.00597	0.304	0.01429
Ammonia	12.2	0.57361	27.7	1.30237
Fluoride	5.49	0.25812	12.4	0.58301
Oil & Grease	2.5	0.11754	4.16	0.19559
TSS	4.06	0.19089	8.53	0.40106
pH	7.5 to 10	NA	NA	NA

Strip pickle [471.61(m)/62(m)]
Production (kg/day): 14293

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.025	0.00036	0.061	0.00087
Lead	0.042	0.00060	0.088	0.00126
Zinc	0.127	0.00182	0.304	0.00435
Ammonia	12.2	0.17437	27.7	0.39592
Fluoride	5.49	0.07847	12.4	0.17723
Oil & Grease	2.5	0.03573	4.16	0.05946
TSS	4.06	0.05803	8.53	0.12192
pH	7.5 to 10	NA		NA

Descale pickle [471.61(n)/62(n)]

Production (kg/day): 47017

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.351	0.01650	0.847	0.03982
Lead	0.584	0.02746	1.23	0.05783
Zinc	1.78	0.08369	4.27	0.20076
Ammonia	171	8.03991	389	18.28961
Fluoride	77.1	3.62501	174	8.18096
Oil & Grease	351	16.50297	584	27.45793
TSS	570	26.79969	1200	56.42040
pH	7.5 to 10	NA	NA	NA

Strip pickle [471.61(n)/62(n)]

Production (kg/day): 14293

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.351	0.00502	0.847	0.01211
Lead	0.584	0.00835	1.23	0.01758
Zinc	1.78	0.02544	4.27	0.06103
Ammonia	171	2.44410	389	5.55998
Fluoride	77.1	1.10199	174	2.48698
Oil & Grease	351	5.01684	584	8.34711
TSS	570	8.14701	1200	17.15160
pH	7.5 to 10	NA	NA	NA

Sheet & Plate Pickle [471.63(n)]

Production (kg/day): 210829 + 8430

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.351	0.07696	0.847	0.18571
Lead	0.584	0.12805	1.23	0.26969
Zinc	1.78	0.39028	4.27	0.93624
Ammonia	171	37.49329	389	85.29175
Fluoride	77.1	16.90487	174	38.15107
Oil & Grease	35.1	7.69599	58.4	12.80473
TSS	57	12.49776	120	26.31108
pH	7.5 to 10	NA	NA	NA

Descale and strip scrub [471.61(o)/62(o)]

Production (kg/day): 61310

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.026	0.00159	0.062	0.00380
Lead	0.043	0.00264	0.09	0.00552
Zinc	0.131	0.00803	0.313	0.01919
Ammonia	12.6	0.77251	28.5	1.74734
Fluoride	5.68	0.34824	12.8	0.78477
Oil & Grease	25.7	1.57567	42.8	2.62407
TSS	41.8	2.56276	87.8	5.38302
pH	7.5 to 10	NA	NA	NA

Continuous vacuum annealing spent bath [471.63(p)]

Production (kg/day): 29116

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.03	0.00087	0.07	0.00204
Lead	0.048	0.00140	0.101	0.00294
Zinc	0.147	0.00428	0.351	0.01022
Ammonia	14.1	0.41054	32	0.93171
Fluoride	6.34	0.18460	14.3	0.41636
Oil & Grease	2.88	0.08385	4.8	0.13976
TSS	4.68	0.13626	9.84	0.28650
pH	7.5 to 10	NA	NA	NA

Continuous vacuum annealing rinse [471.63(q)]

Production (kg/day): 29116

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.033	0.00096	0.08	0.00233
Lead	0.055	0.00160	0.116	0.00338
Zinc	0.169	0.00492	0.403	0.01173
Ammonia	16.2	0.47168	36.8	1.07147
Fluoride	7.29	0.21226	16.4	0.47750
Oil & Grease	3.31	0.09637	5.52	0.16072
TSS	5.38	0.15664	11.3	0.32901
pH	7.5 to 10	NA	NA	NA

Misc. wastewaters [471.63(x)]

Production (kg/day): 452333

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.004	0.00181	0.01	0.00452
Lead	0.007	0.00317	0.014	0.00633
Zinc	0.02	0.00905	0.048	0.02171
Ammonia	1.9	0.85943	4.32	1.95408
Fluoride	0.856	0.38720	1.93	0.87300
Oil & Grease	0.389	0.17596	0.648	0.29311
TSS	0.63	0.28497	1.33	0.60160
pH	7.5 to 10	NA	NA	NA

Sheet scrub [471.63(o)]

Production (kg/day): 219259

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.026	0.00570	0.062	0.01359
Lead	0.043	0.00943	0.09	0.01973
Zinc	0.131	0.02872	0.313	0.06863
Ammonia	12.6	2.76266	28.5	6.24888
Fluoride	5.68	1.24539	12.8	2.80652
Oil & Grease	2.57	0.56350	4.28	0.93843
TSS	4.18	0.91650	8.78	1.92509
pH	7.5 to 10	NA	NA	NA

Outfall 620 Effluent Guideline Calculations

4000 Ton press [471.63(h)]
Production (kg/day): 142648

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.012	0.00171	0.029	0.00414
Lead	0.02	0.00285	0.042	0.00599
Zinc	0.061	0.00870	0.146	0.02083
Ammonia	5.86	0.83592	13.3	1.89722
Fluoride	2.64	0.37659	5.95	0.84876
Oil & Grease	1.2	0.17118	2	0.28530
TSS	1.95	0.27816	4.1	0.58486
pH	7.5 to 10	NA	NA	NA

Sheet & Plate Pickle [471.63(m)]
Production (kg/day): 210829 + 8430

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.025	0.00548	0.061	0.01337
Lead	0.042	0.00921	0.088	0.01929
Zinc	0.127	0.02785	0.304	0.06665
Ammonia	12.2	2.67496	27.7	6.07347
Fluoride	5.49	1.20373	12.4	2.71881
Oil & Grease	2.5	0.54815	4.16	0.91212
TSS	4.06	0.89019	8.53	1.87028
pH	7.5 to 10	NA	NA	NA

Descale pickle [471.61(m)/62(m)]
Production (kg/day): 47017

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.025	0.00118	0.061	0.00287
Lead	0.042	0.00197	0.088	0.00414
Zinc	0.127	0.00597	0.304	0.01429
Ammonia	12.2	0.57361	27.7	1.30237
Fluoride	5.49	0.25812	12.4	0.58301
Oil & Grease	2.5	0.11754	4.16	0.19559
TSS	4.06	0.19089	8.53	0.40106
pH	7.5 to 10	NA	NA	NA

Strip pickle [471.61(m)/62(m)]
Production (kg/day): 4717

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.025	0.00012	0.061	0.00029
Lead	0.042	0.00020	0.088	0.00042
Zinc	0.127	0.00060	0.304	0.00143
Ammonia	12.2	0.05755	27.7	0.13066
Fluoride	5.49	0.02590	12.4	0.05849
Oil & Grease	2.5	0.01179	4.16	0.01962
TSS	4.06	0.01915	8.53	0.04024
pH	7.5 to 10	NA		NA

Descale pickle [471.61(n)/62(n)]

Production (kg/day): 47017

Parameter	30-day Limit (mg/off-kg)	30-day Calc. (kg/day)	Daily Limit (mg/off-kg)	Daily Calc. (kg/day)
Cyanide	0.351	0.01650	0.847	0.03982
Lead	0.584	0.02746	1.23	0.05783
Zinc	1.78	0.08369	4.27	0.20076
Ammonia	171	8.03991	389	18.28961
Fluoride	77.1	3.62501	174	8.18096
Oil & Grease	351	16.50297	584	27.45793
TSS	570	26.79969	1200	56.42040
pH	7.5 to 10	NA	NA	NA

Strip pickle [471.61(n)/62(n)]

Production (kg/day): 4717

Parameter	30-day Limit (mg/off-kg)	30-day Calc. (kg/day)	Daily Limit (mg/off-kg)	Daily Calc. (kg/day)
Cyanide	0.351	0.00176	0.847	0.00425
Lead	0.584	0.00293	1.23	0.00618
Zinc	1.78	0.00894	4.27	0.02144
Ammonia	171	0.85876	389	1.95356
Fluoride	77.1	0.38720	174	0.87383
Oil & Grease	351	1.76272	584	2.93285
TSS	570	2.86254	1200	6.02640
pH	7.5 to 10	NA	NA	NA

Sheet & Plate Pickle [471.63(n)]

Production (kg/day): 210829 + 8430

Parameter	30-day Limit (mg/off-kg)	30-day Calc. (kg/day)	Daily Limit (mg/off-kg)	Daily Calc. (kg/day)
Cyanide	0.351	0.07696	0.847	0.18571
Lead	0.584	0.12805	1.23	0.26969
Zinc	1.78	0.39028	4.27	0.93624
Ammonia	171	37.49329	389	85.29175
Fluoride	77.1	16.90487	174	38.15107
Oil & Grease	35.1	7.69599	58.4	12.80473
TSS	57	12.49776	120	26.31108
pH	7.5 to 10	NA	NA	NA

Descale and strip scrub [471.61(o)/62(o)]

Production (kg/day): 51734

Parameter	30-day Limit (mg/off-kg)	30-day Calc. (kg/day)	Daily Limit (mg/off-kg)	Daily Calc. (kg/day)
Cyanide	0.026	0.00135	0.062	0.00321
Lead	0.043	0.00222	0.09	0.00466
Zinc	0.131	0.00678	0.313	0.01619
Ammonia	12.6	0.65185	28.5	1.47442
Fluoride	5.68	0.29385	12.8	0.66220
Oil & Grease	25.7	1.32956	42.8	2.21422
TSS	41.8	2.16248	87.8	4.54225
pH	7.5 to 10	NA	NA	NA

Continuous vacuum annealing spent bath [471.63(p)]

Production (kg/day): 29116

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.03	0.00087	0.07	0.00204
Lead	0.048	0.00140	0.101	0.00294
Zinc	0.147	0.00428	0.351	0.01022
Ammonia	14.1	0.41054	32	0.93171
Fluoride	6.34	0.18460	14.3	0.41636
Oil & Grease	2.88	0.08385	4.8	0.13976
TSS	4.68	0.13626	9.84	0.28650
pH	7.5 to 10	NA	NA	NA

Continuous vacuum annealing rinse [471.63(q)]

Production (kg/day): 29116

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.033	0.00096	0.08	0.00233
Lead	0.055	0.00160	0.116	0.00338
Zinc	0.169	0.00492	0.403	0.01173
Ammonia	16.2	0.47168	36.8	1.07147
Fluoride	7.29	0.21226	16.4	0.47750
Oil & Grease	3.31	0.09637	5.52	0.16072
TSS	5.38	0.15664	11.3	0.32901
pH	7.5 to 10	NA	NA	NA

Zirconium/hafnium [471.93(h)]

Production (kg/day): 9576

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Chromium	0.06	0.00058	0.15	0.00144
Cyanide	0.04	0.00039	0.099	0.00095
Nickel	0.43	0.00414	0.653	0.00625
Ammonia	20.00	0.19152	45.3	0.43379
Fluoride	8.98	0.08599	20	0.19152
Oil & Grease	4.08	0.03907	6.8	0.06512
TSS	6.63	0.06349	14	0.13406
pH	7.5 to 10	NA	NA	NA

Zirconium/hafnium [471.93(i)]

Production (kg/day): 9576

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Chromium	0.16	0.00153	0.391	0.00374
Cyanide	0.11	0.00102	0.258	0.00247
Nickel	1.13	0.01082	1.71	0.01637
Ammonia	52.10	0.49891	119	1.13954
Fluoride	23.50	0.22504	52.9	0.50657
Oil & Grease	10.70	0.10246	17.8	0.17045
TSS	17.30	0.16566	36.4	0.34857
pH	7.5 to 10	NA	NA	NA

Misc. wastewaters [471.63(x)]
Production (kg/day): 452333

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.004	0.00181	0.01	0.00452
Lead	0.007	0.00317	0.014	0.00633
Zinc	0.02	0.00905	0.048	0.02171
Ammonia	1.9	0.85943	4.32	1.95408
Fluoride	0.856	0.38720	1.93	0.87300
Oil & Grease	0.389	0.17596	0.648	0.29311
TSS	0.63	0.28497	1.33	0.60160
pH	7.5 to 10	NA	NA	NA

Sheet scrub [471.63(o)]
Production (kg/day): 219259

Parameter	*30-day Limit (mg/off-kg)*	*30-day Calc. (kg/day)*	*Daily Limit (mg/off-kg)*	*Daily Calc. (kg/day)*
Cyanide	0.026	0.00570	0.062	0.01359
Lead	0.043	0.00943	0.09	0.01973
Zinc	0.131	0.02872	0.313	0.06863
Ammonia	12.6	2.76266	28.5	6.24888
Fluoride	5.68	1.24539	12.8	2.80652

Final ELG Limitations

	Outfall 602 Loadings	
	kg/day	
Parameter	**30-day**	**Daily**
Cyanide	0.118	0.285
Lead	0.197	0.414
Zinc	0.599	1.436
Ammonia	57.51	130.8
Fluoride	25.93	58.51
Oil & Grease	32.58	54.22
TSS	52.92	111.4

	Outfall 620 Loadings	
	kg/day	
Parameter	**30-day**	**Daily**
Cyanide	0.116	0.279
Lead	0.190	0.400
Zinc	0.579	1.389
Ammonia	57.130	126.641
Fluoride	25.392	57.296
Oil & Grease	28.531	47.473
TSS	46.334	97.530
Chromium	0.002	0.005
Nickel	0.015	0.023

Attachment 2. List of Approved Treatment Additives

Additive	Outfall	Ohio EPA Approval
Suez GN7112	002	July 10, 2020 DFFOs
Suez NT4207	002	July 10, 2020 DFFOs
Suez NX1106	002	July 10, 2020 DFFOs
Suez NT4207	006	July 10, 2020 DFFOs
Suez NX1106	006	July 10, 2020 and July 17, 2021 DFFOs
Suez BL6501	006	July 10, 2020 DFFOs
AP25	006	July 10, 2020 DFFOs
OS5300	006	July 10, 2020 DFFOs
AF1090	006	July 10, 2020 DFFOs
Suez GN7112	006	July 17, 2021 DFFOs
AF3566	006	November 18, 2021 DFFOs

Attachment 3. Whole Effluent Toxicity Reasonable Potential Analysis

Whole effluent toxicity testing for outfall 0IE00010006 produced only non-detection results for acute toxicity in *Pimephales promelas*, and therefore fall under Hazard Category 4. The reasonable potential analyses were only performed for acute toxicity to *Ceriodaphnia dubia.*

Hazard Category Summary

	Ceriodaphnia dubia	***Pimephales promelas***
	Acute	**Acute**
	Outfall 006	**Outfall 006**
Effluent Toxicity (Table A)	4	4

Hazard Categories: 1: Toxicity adequately documented 3: Toxicity possible
2: Toxicity strongly suspected 4: No toxicity

Table A. Effluent Toxicity

	Ceriodaphnia dubia	***Pimephales promelas***
	Outfall 006	**Outfall 006**
WLA	1.0	1.0
# of tests	6	6
Maximum value	0.6	--
Percent of tests >WLA	0	--
Geometric mean	0.24	--
Average Exceedance (Geomean * Percent of tests >WLA)	0.14	--
Average Exceedance / WLA	0.14	--

Attribute Evaluated	**Hazard Category 1**	**Hazard Category 2**	**Hazard Category 3**	**Hazard Category 4**
Degree of Toxicity	Adequately Documented	Strongly Suspected	Possible	None
(1) Minimum number of tests	3 Cd/Pp	1	0 or 1	0 or 1
(2) Percent of tests >WLA	>30	20 to 30	10 to 20	10 Cd/Pp
(3) Average Exceedance/WLA[1] (Tables B and C data not available)				
(a) Acute[2]	> 0.3	≥ 0.3	≥ 0.2	< 0.2 Cd/Pp
(4) Maximum TU value	≥(3xWLA)	≥WLA	≥WLA	<WLA Cd/Pp

[1] Compare (per cent exceedances x geometric mean TU) to table factor.
[2] Use 0.3 x WLA for situations where AIM exists.

Addendum 1. Acronyms

ABS	Anti-backsliding
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BPJ	Best professional judgment
BPT	Best Practicable Control Technology Currently Available
BTJ	Best technical judgment
CFR	Code of Federal Regulations
CONSWLA	Conservative substance wasteload allocation
CWA	Clean Water Act
CWIS	Cooling water intake structure
DMR	Discharge Monitoring Report
DMT	Dissolved metal translator
ELG	Federal effluent limitation guideline
gpm	Gallons per minute
IMZM	Inside mixing zone maximum
MDL	Analytical method detection limit
MGD	Million gallons per day
NPDES	National Pollutant Discharge Elimination System
NSPS	New source performance standards
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
ORSANCO	Ohio River Valley Water Sanitation Commission
PEL	Preliminary effluent limit
PEQ	Projected effluent quality
PMP	Pollution Minimization Program
PPE	Plant performance evaluation
SIC	Standard Industrial Classification
TBEL	Technology-based effluent limit
TMDL	Total Daily Maximum Load
TRE	Toxicity reduction evaluation
TU	Toxicity unit
U.S. EPA	United States Environmental Protection Agency
WET	Whole effluent toxicity
WLA	Wasteload allocation
WQBEL	Water-quality-based effluent limit
WQS	Water Quality Standards